Available online at www.sciencedirect.com
SCIENCE DIRECT®
ELSEVIER
Nuclear Instruments and Methods in Physics Research B 216 (2004) ix–xii
NIM B
Beam Interactions with Materials & Atoms
www.elsevier.com/locate/nimb

Contents

Editorial vii
Contents ix

Track formation and fabrication of nanostructures with MeV-ion beams
M. Toulemonde, C. Trautmann, E. Balanzat, K. Hjort and A. Weidinger 1
The shape and ordering of self-organized nanostructures by ion sputtering
F. Frost, B. Ziberi, T. Höche and B. Rauschenbach 9
Thick elevation of silicon on patterned structure using ion implantation induced selective etching
M.Q. Huda and K. Sakamoto 20
Ion-beam induced defects and nanoscale amorphous clusters in silicon carbide
W.J. Weber, F. Gao, R. Devanathan, W. Jiang and C.M. Wang 25
Effect of substrate orientation on defect generation and annealing behaviour in carbon implanted silicon
M. Häberlen, J.K.N. Lindner and B. Stritzker 36
Atomistic modeling of ion beam induced amorphization in silicon
L. Pelaz, L.A. Marqués, M. Aboy and J. Barbolla 41
Ion beam induced defects in crystalline silicon
F. Cristiano, N. Cherkashin, X. Hebras, P. Calvo, Y. Lamrani, E. Scheid, B. de Mauduit, B. Colombeau, W. Lerch, S. Paul and A. Claverie 46
The laser annealing induced phase transition in silicon: a molecular dynamics study
L.A. Marqués, L. Pelaz, M. Aboy and J. Barbolla 57
Chemically guided epitaxy of Rb-ion amorphized α-quartz: the roles of Rb and oxygen
S. Gąsiorek, S. Dhar, J. Keinonen, K.P. Lieb and T. Sajavaara 62
Damage accumulation and dopant migration during shallow As and Sb implantation into Si
M. Werner, J.A. van den Berg, D.G. Armour, W. Vandervorst, E.H.J. Collart, R.D. Goldberg, P. Bailey and T.C.Q. Noakes 67
Nitrogen distribution during oxidation of low and medium energy nitrogen-implanted silicon
D. Skarlatos, M. Perego, C. Tsamis, S. Ferrari, M. Fanciulli and D. Tsoukalas 75
Self-interstitial diffusion and clustering with impurities in crystalline silicon
S. Mirabella, D. De Salvador, E. Napolitani, F. Giannazzo, G. Impellizzeri, G. Bisognin, A. Terrasi, V. Raineri, M. Berti, A. Carnera, A.V. Drigo and F. Priolo 80
Depth dependence of defect evolution and TED during annealing
B. Colombeau, N.E.B. Cowern, F. Cristiano, P. Calvo, Y. Lamrani, N. Cherkashin, E. Lampin and A. Claverie 90
Coupling of atom-by-atom calculations of extended defects with B kick-out equations: application to the simulation of boron ted
E. Lampin, F. Cristiano, Y. Lamrani and B. Colombeau 95
Atomistic analysis of the ion beam induced defect evolution
M. Aboy, L. Pelaz, L.A. Marqués and J. Barbolla 100
Annealing behavior of high temperature implanted Fe impurities in n-InP
T. Cesca, A. Gasparotto, B. Fraboni and F. Priolo 105
Annealing of $BaTiO_3$ thin films after heavy ion implantation
M. Dietrich, Ch. Buchal, J.G. Correia, M. Deicher, M. Schmid, M. Uhrmacher, U. Vetter and U. Wahl 110

doi:10.1016/S0168-583X(04)00177-6

ZnTe nanoparticles formed by ion implantation in a SiO_2 layer on silicon
R. Chemam, A. Bouabellou, J.J. Grob, D. Muller and G. Schmerber 116
Formation of CdSe nanoclusters in MgO by ion beam synthesis
M.A. van Huis, A. van Veen, H. Schut, S.W.H. Eijt, B.J. Kooi and J.Th.M. De Hosson 121
n-ZnO/p-Si photodiodes fully isolated by B^+ ion-implantation
C.H. Park, I.S. Jeong, H.S. Bae, T.G. Kim and S. Im 127
FTIR and Vis–FUV real time spectroscopic ellipsometry studies of polymer surface modifications during ion beam bombardment
A. Laskarakis, C. Gravalidis and S. Logothetidis 131
Microstructure of β-$FeSi_2$ buried layers synthesis by ion implantation
R. Ayache, E. Richter and A. Bouabellou 137
Physical properties and structure of thin ion-beam modified polymer films
M. Guenther, G. Gerlach, G. Suchaneck, K. Sahre, K.-J. Eichhorn, V. Baturin and S. Duvanov 143
Formation, growth and dissociation of He bubbles in Al_2O_3
M.A. van Huis, A. van Veen, F. Labohm, A.V. Fedorov, H. Schut, B.J. Kooi and J.Th.M. De Hosson 149
Fluence dependence and thermal stability of defects in helium-implanted cubic zirconia
S. Saudé, R.I. Grynszpan, W. Anwand, G. Brauer, J.J. Grob and Y. Le Gall 156
Helium diffusion in metals investigated by nuclear reaction analysis
J.L. Flament, F. Zíélinski, S. Saudé and R.I. Grynszpan 161
Optical study of Si nanocrystals in Si/SiO_2 layers by spectroscopic ellipsometry
A. En Naciri, M. Mansour, L. Johann, J.J. Grob and C. Eckert 167
Thermal evolution of {1 1 3} defects in silicon: transformation against dissolution
P. Calvo, A. Claverie, N. Cherkashin, B. Colombeau, Y. Lamrani, B. de Mauduit and F. Cristiano . . . 173
Ion bombardment induced morphology modifications on self-organized semiconductor surfaces
C. Hofer, S. Abermann, C. Teichert, T. Bobek, H. Kurz, K. Lyutovich and E. Kasper 178
Surface structure dependence of impact processes of gas cluster ions
T. Aoki and J. Matsuo 185
Surface smoothing with large current cluster ion beam
T. Seki and J. Matsuo 191
Slow highly charged ions for nanoscale surface modifications
U. Kentsch, S. Landgraf, M. Schmidt, H. Tyrroff, G. Zschornack, F. Grossmann, V.P. Ovsyannikov and F. Ullmann 196
Sputtering of binary crystal surface under grazing ion bombardment
A.A. Dzhurakhalov 202
Roughness evolution of some X-UV reflective materials induced by low energy (<1 keV) ion beam milling
P. Gailly, J.-P. Collette, C. Jamar, K. Fleury-Frenette, P. Médart and Y. Stockman 206
Optical and electrical properties of Si-nanocrystals ion beam synthesized in SiO_2
B. Garrido, M. López, A. Pérez-Rodríguez, C. García, P. Pellegrino, R. Ferré, J.A. Moreno, J.R. Morante, C. Bonafos, M. Carrada, A. Claverie, J. de la Torre and A. Souifi. 213
Electroluminescence properties of SiO_x layers implanted with rare earth ions
A. Irrera, M. Miritello, D. Pacifici, G. Franzò, F. Priolo, F. Iacona, D. Sanfilippo, G. Di Stefano and P.G. Fallica 222
Nanocrystals manufacturing by ultra-low-energy ion-beam-synthesis for non-volatile memory applications
P. Normand, E. Kapetanakis, P. Dimitrakis, D. Skarlatos, K. Beltsios, D. Tsoukalas, C. Bonafos, G. Ben Assayag, N. Cherkashin, A. Claverie, J.A. Van Den Berg, V. Soncini, A. Agarwal, M. Ameen, M. Perego and M. Fanciulli 228
Ion induced precipitation of metal particles in triethoxysilane for optical and magnetic applications
J.C. Pivin 239
Structural and magnetic properties of Fe–Al silica composites prepared by sequential ion implantation
C. de Julián Fernández, M.A. Tagliente, G. Mattei, C. Sada, V. Bello, C. Maurizio, G. Battaglin, C. Sangregorio, D. Gatteschi, L. Tapfer and P. Mazzoldi 245

A positron beam study of hydrogen confined in nano-cavities in crystalline silicon
H. Schut, H. van Gog, A. van Veen, M.A. van Huis and S.W.H. Eijt 251
Comparison of thermally and mechanically induced Si layer transfer in hydrogen-implanted Si wafers
T. Höchbauer, A. Misra, M. Nastasi, K. Henttinen, T. Suni, I. Suni, S.S. Lau and W. Ensinger..... 257
Buried silicon dioxide formation in a precursor nanocavity layer in Si
A. van Veen, A. Rivera, H. Schut and H. van Gog..... 264
Mechanical properties of pulsed laser-deposited hydroxyapatite thin film implanted at high energy with N^+ and Ar^+ ions. Part I: nanoindentation with spherical tipped indenter
H. Pelletier, V. Nelea, P. Mille and D. Muller 269
Mechanical properties of pulsed laser-deposited hydroxyapatite thin films implanted at high energy with N^+ and Ar^+ ions. Part II: nano-scratch tests with spherical tipped indenter
H. Pelletier, V. Nelea, P. Mille and D. Muller 275
Direct evidence of the recombination of silicon interstitial atoms at the silicon surface
Y. Lamrani, F. Cristiano, B. Colombeau, E. Scheid, P. Calvo, H. Schäfer and A. Claverie 281
Diffusion of ion beam injected self-interstitial defects in silicon layers grown by molecular beam epitaxy
D. De Salvador, E. Napolitani, S. Mirabella, G. Impellizzeri, F. Priolo, A. Terrasi, G. Bisognin, M. Berti, A.V. Drigo and A. Carnera 286
A simple model for boron trapping by He implantation extended defects in Si: the role of boron diffusivity
F. Cayrel, D. Alquier, D. Mathiot, L. Ventura, L. Vincent, G. Gaudin and R. Jérisian 291
Optimization of InGaAs/InP MHBT and HBT's technology: control and modeling of beryllium diffusion phenomena
M. Ihaddadene-Lenglet and J. Marcon 297
Diffusion simulations of boron implanted at low energy (500 eV) in crystalline silicon
L. Ihaddadene-Le Coq, J. Marcon, A. Dush-Nicolini, K. Masmoudi and K. Ketata 303
Ion beam induced coherent displacement in Al on Au system
J. Peltola and K. Nordlund..... 308
Microstructure of N^+ ion beam induced epitaxial crystallized Si
P.K. Sahoo, S. Gupta, A. Pradhan and V.N. Kulkarni 313
Comparative analysis of the implantation-induced structural modifications in GaAs and Ge
I.D. Desnica-Frankovic 318
Cathodoluminescence of α-quartz after hot Ge ion irradiation
P.K. Sahoo, S. Dhar, S. Gąsiorek and K.P. Lieb 324
Ion beam synthesis of Co nanoparticles in SiO_2: Monte Carlo simulation
C. Cerruti, J.P. Stoquert, C. D'Orléans, C. Estournès, J.J. Grob, J.L. Guille, F. Haas, D. Muller and M. Richard-Plouet..... 329
Finite size effects in phase transformation kinetics in thin films and surface layers
V.I. Trofimov, I.V. Trofimov and J.-I. Kim 334
Ion-beam induced modification of pores array in anodic alumina
N.N. Cherenda, V.V. Uglov, G.V. Litvinovich and A.L. Danilyuk..... 340
Visible photoluminescence from Si ion-beam-mixed SiO_2/Si/SiO_2 layers deposited by e-beam evaporation
J.H. Son, H.B. Kim, C.N. Whang, M.C. Sung, K. Jeong, S. Im and K.H. Chae 346
Magnetic modifications of thin CoFe films induced by Xe^+-ion irradiation
R. Gupta, G.A. Müller, P. Schaaf, K. Zhang and K.P. Lieb 350
Irradiation effects in carbon nanotubes
A.V. Krasheninnikov and K. Nordlund..... 355
Ellipsometric spectroscopy study of Ar ion-beam mixed SiO_2/Si/SiO_2 layers
H.B. Kim, J.H. Son, C.N. Whang and K.H. Chae 367
Elongated Co nanoparticles induced by swift heavy ion irradiations
C. D'Orléans, J.P. Stoquert, C. Estournès, J.J. Grob, D. Muller, J.L. Guille, M. Richard-Plouet, C. Cerruti and F. Haas 372

Surface modification with gas cluster ion beams from fundamental characteristics to applications
N. Toyoda, J. Matsuo and I. Yamada 379
Formation and dissociation of Zn nanoclusters in MgO
M.A. van Huis, A. van Veen, H. Schut, B.J. Kooi, J.Th.M. De Hosson, X.S. Du, T. Hibma and R. Fromknecht 390
Combinatorial ion implantation – a smart technique applied to synthesize CdSe-nanocrystals
I. Großhans, H. Karl and B. Stritzker 396
Effect of diffusion on ion beam-synthesized PbS nanocrystals
R. Espiau de Lamaestre, H. Bernas and F. Jomard 402
Direct ion beam synthesis of II–VI nanocrystals
U.V. Desnica, M. Buljan, I.D. Desnica-Frankovic, P. Dubcek, S. Bernstorff, M. Ivanda and H. Zorc . . 407

Author index 415